

Work Order ID 107072

September-18-13 11:39:58 AM

107072

Page 1

Item ID: D4310-1

Accept

N900040100

Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Block

Start Date: 9/18/13

Start Qty: 26.00

***28* 20**

Cust Item ID:

Required Date: 9/20/13

Req'd Qty: 26.00

***28* 20**

Customer:

Reference:

Approvals:

Process Plan: *W*

Date:

Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

Draw Nbr

Revision Nbr

D4310

A

90

0.00

90

Bandsaw

Memo

0.00

Jeaspa Bandsaw

cut to 1.50" LONG

DR/Ba
13/10/02
OK 13/10/03

26 0

100

0.00

100

HAAS 1

Memo

0.00

HAAS CNC vertical machine #1

MACHINE AS PER FOLI FB027 AND DWG

FOLIO REV: *AA*
DWG REV: *A*

DEBURR

1 OK 13/10/03
DAS 40
9-89
13-10/03

13 24
OK OK

PTO



FIO
x2

NCR: Yes / No

WORK ORDER NON-CONFORMANCE / UPDATE

DQA: AW Date: 13/10/02QA Closed: AW Date: 13/11/02

| | | | | | |
|---------------------------|---|---|------------------------------------|--|--------------------------------------|
| Work Order: <u>107072</u> | DISPOSITION Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input type="checkbox"/> Work Order Update <input type="checkbox"/> | AGAINST DEPARTMENT/PROCESS | | | |
| Part No. <u>D4310-1</u> | | Skid-tube <input type="checkbox"/> | Crosstube <input type="checkbox"/> | Water Jet <input type="checkbox"/> | Engineering <input type="checkbox"/> |
| NCR No. <u>13-3261</u> | | Machining <input checked="" type="checkbox"/> | Small Fab <input type="checkbox"/> | Prod. Eng. Coord. <input type="checkbox"/> | Quality <input type="checkbox"/> |
| | | Thermoforming <input type="checkbox"/> | Finishing <input type="checkbox"/> | Rec/Store/Packaging <input type="checkbox"/> | Other <input type="checkbox"/> |
| | | Large Fab <input type="checkbox"/> | Composite <input type="checkbox"/> | Supplier <input type="checkbox"/> | |

| Root Cause | Date | Step | Qty | Description of work order update or Non-conformance | Initial Chief Eng | Action Description | Sign & Date | Verification | QC Inspector |
|---------------|----------|------|-----|---|-------------------------------------|---|-----------------|--|---------------------------------------|
| Doc/Data | 13/10/02 | | 2 | PART CAME OUT OF VISE. PC. use of down tail jaws that have been worn. Tooling | DAS 16 9-89 Q57042 B10012 | SCRAP + DESTROY Replac M127027 Re machi jaws 97 17 RM | Gmf 13/10/04 |  13/11/06  | DAS 16 9-89 13/10/02 Q57042 |
| Equip/Tooling | | 100 | 5 | | | | | | |
| Operator | | | | | | | | | |
| Material | | | | | | | | | |
| Setup | | | | | | | | | |
| Other | | | | | | | | | |
| Process | | | | | | | | | |
| Supplier | | | | | | | | | |
| Training | | | | | | | | | |
| Unapproved | | | | | | | | | |

FAULT CATEGORY

| Landing Gear | General | |
|---|---|---|
| <input type="checkbox"/> Bending | <input type="checkbox"/> Bend | <input type="checkbox"/> Grain |
| <input type="checkbox"/> Centre Not Concentric to O/S | <input type="checkbox"/> BOM/Route | <input type="checkbox"/> Hardware |
| <input checked="" type="checkbox"/> Cracks | <input type="checkbox"/> Broken/Damaged | <input type="checkbox"/> Inspection Incomplete |
| <input type="checkbox"/> Crushed/Crimped | <input type="checkbox"/> Burrs | <input type="checkbox"/> Instructions Incomplete/Unclear |
| <input type="checkbox"/> Cuffs | <input type="checkbox"/> Contamination | <input type="checkbox"/> Maintenance |
| <input type="checkbox"/> Heat Treat | <input type="checkbox"/> Countersink | <input type="checkbox"/> Misabeled |
| <input type="checkbox"/> Inspection Strip in Tube | <input type="checkbox"/> Cut Too Short | <input type="checkbox"/> Misread |
| <input type="checkbox"/> Ripples in Bend | <input type="checkbox"/> Drill Holes | <input type="checkbox"/> Offset |
| <input type="checkbox"/> Torque Waves in Extrusion | <input type="checkbox"/> Drawing | <input type="checkbox"/> Out of Calibration |
| <input type="checkbox"/> Turning Sequence | <input type="checkbox"/> Finish | <input type="checkbox"/> Out of Sequence |
| <input type="checkbox"/> Wave/Twist in Tube | <input type="checkbox"/> Folio | <input type="checkbox"/> Outside Dimensions |
| | | <input type="checkbox"/> Ovalized <input type="checkbox"/> Over/Under tolerance <input type="checkbox"/> Part Incorrect <input type="checkbox"/> Part Lost/Missing <input checked="" type="checkbox"/> Part Moved <input type="checkbox"/> Positioned Wrong <input type="checkbox"/> Power Loss/Surge |
| | | <input type="checkbox"/> Pressure/Forced <input type="checkbox"/> Temperature/Cure <input type="checkbox"/> Weld <input type="checkbox"/> Wrong Stock Pulled <input type="checkbox"/> Other |

DQA: _____ Date: _____

QA Closed: KHDate: 13/11/22

WORK ORDER NON-CONFORMANCE / UPDATE

Work Order update only ☐

| Work Order: <u>107072</u> Part No. <u>D4310-1</u> NCR No. <u>B-3261</u> | | | | DISPOSITION Rework <input type="checkbox"/> Scrap <input checked="" type="checkbox"/> Use-as-is <input type="checkbox"/> Suspected Unapproved <input type="checkbox"/> | | AGAINST DEPARTMENT/PROCESS <table style="width:100%; font-size: small;"> <tr> <td>Skid-tube <input type="checkbox"/></td> <td>Crosstube <input type="checkbox"/></td> <td>Water Jet <input type="checkbox"/></td> <td>Engineering <input type="checkbox"/></td> </tr> <tr> <td>Machining <input checked="" type="checkbox"/></td> <td>Small Fab <input type="checkbox"/></td> <td>Prod. Eng. Coord. <input type="checkbox"/></td> <td>Quality <input type="checkbox"/></td> </tr> <tr> <td>Thermoforming <input type="checkbox"/></td> <td>Finishing <input type="checkbox"/></td> <td>Rec/Store/Packaging <input type="checkbox"/></td> <td>Other <input type="checkbox"/></td> </tr> <tr> <td>Large Fab <input type="checkbox"/></td> <td>Composite <input type="checkbox"/></td> <td>Supplier <input type="checkbox"/></td> <td></td> </tr> </table> | | | | | | Skid-tube <input type="checkbox"/> | Crosstube <input type="checkbox"/> | Water Jet <input type="checkbox"/> | Engineering <input type="checkbox"/> | Machining <input checked="" type="checkbox"/> | Small Fab <input type="checkbox"/> | Prod. Eng. Coord. <input type="checkbox"/> | Quality <input type="checkbox"/> | Thermoforming <input type="checkbox"/> | Finishing <input type="checkbox"/> | Rec/Store/Packaging <input type="checkbox"/> | Other <input type="checkbox"/> | Large Fab <input type="checkbox"/> | Composite <input type="checkbox"/> | Supplier <input type="checkbox"/> | |
|---|------------------------------------|--|--------------------------------------|--|------------------------------|---|--|----------------------|--------------|--|--|------------------------------------|------------------------------------|------------------------------------|--------------------------------------|---|------------------------------------|--|----------------------------------|--|------------------------------------|--|--------------------------------|------------------------------------|------------------------------------|-----------------------------------|--|
| Skid-tube <input type="checkbox"/> | Crosstube <input type="checkbox"/> | Water Jet <input type="checkbox"/> | Engineering <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | |
| Machining <input checked="" type="checkbox"/> | Small Fab <input type="checkbox"/> | Prod. Eng. Coord. <input type="checkbox"/> | Quality <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | |
| Thermoforming <input type="checkbox"/> | Finishing <input type="checkbox"/> | Rec/Store/Packaging <input type="checkbox"/> | Other <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | |
| Large Fab <input type="checkbox"/> | Composite <input type="checkbox"/> | Supplier <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | |
| Root Cause | Date | Step | Qty | Description of work order update or non-conformance | Initial Chief Eng | Action Description | Sign & Date | Verification | QC Inspector | | | | | | | | | | | | | | | | | | |
| Design <input type="checkbox"/> | | | | Found on Qty 12 Parts to have multiple usn. (out of 101-.) Qty x 9 = Parallelism is @ 0.006 should be @ 0.004. B Dm 0.432 - 0.465 is measuring between 0.005" over to 0.005" under. Qty 4. B Dm 0.136 is taken to 0.115 min on 0.136 parts (9) slots necessary 0.002" under 101 on 6 parts | DAS 12 989 13/11/1 | 12 PARTS HAVE Fit of parts is critical in balancing the rotor blades. SCRAP 97.17. | 13/11/15 B.A. 13/11/16 DAS 08 9-89 | 13/11/22 13/10/21 | | | | | | | | | | | | | | | | | | | |
| Doc/Data <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Equip/Tooling <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Handling/Pre <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Material <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Operator <input checked="" type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Offset/Setup <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Process <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Supplier <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Training <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Transport <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Unapproved <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | |

FAULT CATEGORY

Landing Gear

- | |
|---|
| <input type="checkbox"/> Bending |
| <input type="checkbox"/> Centre Not Concentric |
| <input type="checkbox"/> Cracks |
| <input type="checkbox"/> Crimp/Kink/Ripple/Wave |
| <input type="checkbox"/> Cuffs |
| <input type="checkbox"/> Crushing |
| <input type="checkbox"/> Heat Treat |
| <input type="checkbox"/> Inspection Strip in Tube |
| <input type="checkbox"/> Marks/Chatter |
| <input type="checkbox"/> Turning Sequence |
| <input type="checkbox"/> Wave/Twist in Tube |

- | |
|---|
| <input type="checkbox"/> Bend |
| <input type="checkbox"/> BOM/Route |
| <input type="checkbox"/> Broken/Damage/Defect |
| <input type="checkbox"/> Burrs |
| <input type="checkbox"/> Contamination |
| <input type="checkbox"/> Countersink |
| <input type="checkbox"/> Cut Too Short |
| <input type="checkbox"/> Drawing |
| <input type="checkbox"/> Drill Holes |
| <input type="checkbox"/> Finish |
| <input type="checkbox"/> Fit/Function |

- | |
|--|
| <input type="checkbox"/> Folio/Program |
| <input type="checkbox"/> Grain |
| <input type="checkbox"/> Hardware |
| <input type="checkbox"/> Inspection Incomplete/Unqualified |
| <input type="checkbox"/> Instructions Incomplete/Unclear |
| <input type="checkbox"/> Misaligned/off center |
| <input type="checkbox"/> Mislabeled |
| <input type="checkbox"/> Misread |
| <input type="checkbox"/> Off-set |
| <input type="checkbox"/> Out of Calibration |
| <input type="checkbox"/> Out of Sequence |

- | | |
|---|---|
| <input type="checkbox"/> Outside Dimensions | <input type="checkbox"/> Pressure/Forced |
| <input type="checkbox"/> Over/Under tolerance | <input type="checkbox"/> Set-up |
| <input type="checkbox"/> Part Incorrect | <input type="checkbox"/> Temperature/Cure |
| <input type="checkbox"/> Part Lost/Missing | <input type="checkbox"/> Weld |
| <input type="checkbox"/> Part Moved | <input type="checkbox"/> Wrong Stock Pulled |
| <input type="checkbox"/> Positioned Wrong | <input checked="" type="checkbox"/> Other |
| <input type="checkbox"/> Power Loss/Surge | |
- out of tolerance

Work Order ID 107072

107072

Page 2

September-18-13 11:39:58 AM

Item ID: D4310-1

Accept

N900040100

Setup Start *NS1*

Revision ID:

Stop *NS2*

Item Name: Block

Start Date: 9/18/13 Start Qty: 26.00

26

Cust Item ID:

Required Date: 9/20/13 Req'd Qty: 26.00

26

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start *NR1*

Stop *NR2*

| Sequence ID/ Work Center ID | Operation Description | Set Up/ Run Hours | Tool ID | Tool # | Plan Code | Accept Qty | Reject Qty | Reject Number | Insp. Stamp |
|--|---|----------------------|---------|--------------|--------------|---------------|---------------|------------------|----------------------------|
| 110 *110* QC Quality Control | QC2- Inspect parts off machine FAI/FAIB Memo | 0.00 0.00 | | 13/10/04 | | 13 (26) | 24 (26) | | |
| 120 *120* QC Quality Control | QC8- Inspect parts - second check Memo | 0.00 0.00 | | B.A 13/11/16 | | 13 | 24 | | DAS 08 9-89 |
| 130 *130* Packaging Packaging | Identify as per dwg & Stock Location: 51101 Memo | 0.00 0.00 | | | | 13x | | | DAS 28 9-89 13-11-18 |

Work Order ID 107072

107072

Page 3

September-18-13 11:39:58 AM

Item ID: D4310-1

Accept

N900040100

Setup Start *NS1*

Revision ID:

Stop *NS2*

Item Name: Block

Start Date: 9/18/13

Start Qty: 26.00

26

Cust Item ID:

Required Date: 9/20/13

Req'd Qty: 26.00

26

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start *NR1*

QC:

Date:

SPC (Y/N):

Date:

Stop *NR2*

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

140

QC21- Final Inspection - Work Order Release

0.00

140

QC

Memo

0.00

Quality Control

13/11/20

13-11-19

Picklist Print

September-18-13 11:39:58 AM

Page 1

Work Order ID: 107072

Parent Item: D4310-1

Parent Item Name: Block

Start Date: 9/18/13

Required Date: 9/20/13

Start Qty: 26.00

Required Qty: 26.00

Comments: IPP Rev:A 11.01.03 new issue DD verf:EC

| Component Item ID/ Item Name | Replacement Item ID | Mfg/ Purch | Bin Item | Primary Location | Last Location | Route Seq ID | Unit of Measure | Qty on Hand | Qty per Kit | Total Qty | Qty Issued | Date Issued | Status |
|---|------------------------|---------------|-------------|---------------------|------------------|-----------------|--------------------|-----------------|-------------|--------------|---------------|----------------|--------|
| MPTFES2.000 Polytetrafluoroethylene Molded Sheet | | Purchased | No | | | 100 | f | 9.1600 | 0.1666 | 4.5595789 | | | |
| | | | | <u>Location</u> | | <u>Loc Qty</u> | | <u>Loc Code</u> | | | | | |
| | | | | MAT018 | | 9.16 | | | | | | | |
| | | | | 120727 | | 4.52 | | | | | | | |
| | | | | 121577 | | 4.64 | | | | | | | |

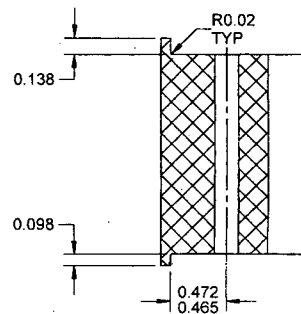
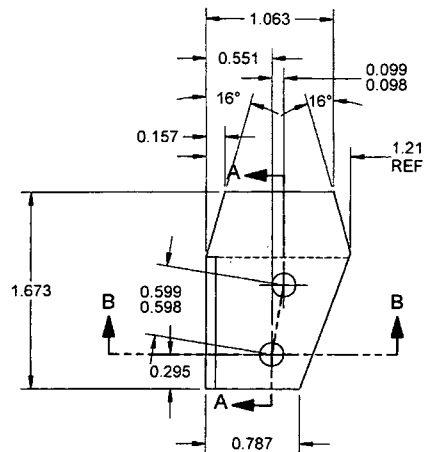
DR/B.A
13/10/02

THIS IS
ALL THE
MATERIAL WE
HAVE
PR.

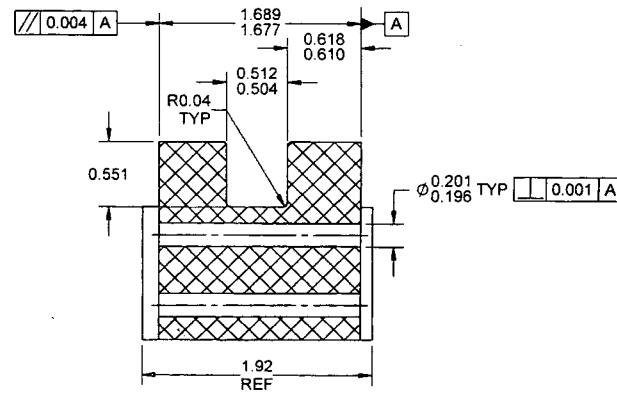
2.6 ft

M127027 → 4.00

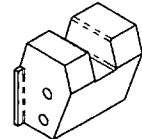
on 13/10/03



SECTION B-B



SECTION A-A



W/O 107072

RELEASED
R 2010-12-21
PER ECN 10-673

NOTES:

- 1) MATERIAL: PTFE SHEET, 2.00 THICK X 2.00 WIDE
PER AMS3667
REF DART SPEC MPTFES
- 2) FINISH: N/A
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.020 MAX
- 6) IDENTIFICATION: IDENTIFY PER QSI 044 6.1
- 7) WEIGHT: 0.21 lbs

D4310-1 BLOCK, ANTI-ROTATION

| REV. | NEW ISSUE | DESCRIPTION | BY | DATE |
|------------|-----------|-------------|----|------|
| DESIGN | | | | |
| DRAWN | | | | |
| CHECKED | | | | |
| MFG. APPR. | | | | |
| APPROVED | | | | |
| DE APPR. | | | | |
| DATE | 10.12.16 | | | |

| | |
|--|--------------|
| DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA | REV. A |
| DRAWING NO. D4310 | SHEET 1 OF 1 |
| TITLE BLOCK, ANTI-ROTATION | SCALE NTS |
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Jean-Luc Menard

From: David Shepherd <dshepherd@dartaero.com>
Sent: Monday, June 18, 2012 6:56 PM
To: 'Jean-Luc Menard'
Cc: Pat Smith
Subject: D4310-1 Anti Rotation Blocks

JL,

Further to our conversation when I was in Hawkesbury this week and with reference to D4310 Rev A, the 0.004" parallelism on the 1.122 dimension is only important over the length of the 1.122 long tab ($1.673 - 0.551 = 1.122$).

Thanks,
David